



Photo courtesy batwin + robin

Choosing The Right Video Player

Key considerations for digital signage applications.

The SECU Daily Planet at the North Carolina Museum of Natural Sciences features an immersive 40-foot-high screen that spans three floors. Delta media servers from 7th Sense handle all warping, blending and color balancing.

By Ramzi Shakra

Today's video playback devices offer robust features highly optimized for their target application, from palm-sized players designed for digital signage and interactive kiosks to highly sophisticated servers for large screen projection and planetariums. It's not possible in the space we have here to cover all the myriad options and categories available. However, emphasis will be placed on the low-cost professional video players because these devices cover the needs of a majority of installation types. They are designed for playback on small- to mid-sized displays in such applications as theme parks, museums, retail and advertising-driven digital signage.

Image Quality

Due to the digital outputs of video players, image quality is primarily a function of the compression type, resolution, bit rate and scaling utilized. As can be expected, MPEG compression is the most prevalent, with support for MPEG1, MPEG2 and H.264 (MPEG4 Part 10). High-end players use native JPEG2000 compression or uncompressed playback. File format support tends to vary from device to device, so it's important to ensure that the player supports the file format type the content will be delivered in.

The current crop of players typically max out at 30fps at 1920x1080 and use frame doubling on the output to achieve 60p. All else being equal, the higher the bit rate (or less compression), the better the video quality. Higher bit rates are necessary for larger displays. Compression type is also a big factor in image quality. A 10Mbps H.264 file will look better than one encoded at 10Mbps MPEG2.

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At the Brooklyn Botanic Garden's new Visitor Center, three tables detail different areas of the garden. Photos of trees, plants and birds can be lifted by small knobs to reveal six-inch LCD screens that play a video about the image. Small, solid-state Technovision MPEG players in the tables are triggered by a magnetic switch built into the hinge.

Tips

- » Avoid excessive video processing by the player or display.
- » Pick a display with a native resolution that matches the player's output.
- » Ensure that the authored content file matches the frame rate and resolution set on the player's output.
- » Follow the manufacturer's recommendations for the optimum video settings for the device.

To maximize image quality, excessive video processing by the player and the video display should be minimized. A common mistake that leads to poor image quality is to rely on the player and the display to scale the video. To optimize image quality, pick a display with a native resolution that matches the player's output. You should also ensure that the authored content resolution matches the output display mode set on the device. The frame rate should also match. Further image optimization can be gained by following the manufacturer's recommendations for the optimum video settings for the device.

Key Features

Key features to consider when choosing a video player are simple playlist and looping control show control, synced playback and graphics overlay capability. Playlist and looping control refers to the ability to create a sequence of video files and to set playback in a continuous loop. For many applications it's important to ensure that the device can auto-run a preset playlist or loop on power-on.

Show control refers to the ability of the player to support a basic set of commands through either an RS232 or a network connection. A basic command set can include loading, playing, pausing and looping a video clip. The more robust the control and custom scripting applications, the more applicable the device is to more demanding digital signage applications. Some of the more advanced control features include time of day playback, weighted playback, playback zones and device monitoring.

Synced playback is the ability of multiple units to play their video clip synchronized to each other. This feature can also be

used to create super-wide-screen projections. Many players use a network protocol to synchronize their output, which in most cases proves acceptable. For true synchronized playback, a genlocked output is required on the player, along with a frame-accurate protocol to trigger playback.

Because of the requirements for digital signage, many players can now support some degree of graphic overlay capability and video transitions. For graphic-centric applications, PCs typically have better performance and more capabilities than the player's hardware-based decoders.

Other features that can prove beneficial to your application include touchscreen support for kiosk applications, GPS triggering capability and live HDTV playback via a built-in tuner.

Playlist & File Transfer

Different applications require different approaches to the transfer and control of video files, schedules and playlists. Depending on the device, transfer can be achieved via a network connection (IP over the public internet, LAN, WAN or 3G/4G LTE cellular networks) and via a portable storage device, such as an SD memory card or USB drive. Many devices can play the file directly from the attached storage device. Care should be taken in the selection of SD cards because not all can deliver high bit rate speeds. High-end units may feature remov-



The Hollywood Wax Museum's on-the-street lobby attracts the attention of passersby with HD video monitors displaying content from an Alcorn McBride A/V Binloop player. The control system was programmed to provide simple operation by museum employees.

able hard drives and, more recently, solid-state hard drives.

If device control and file transfer will be performed remotely or offsite, it is important that this requirement be specified in the project's network design planning stage. Factors that might need to be considered include bandwidth allowances, which AV network and what network protocol the device will run on, as well as addressing potential firewall and security issues.

For most digital signage players, the output interface is typically DVI or HDMI. Because most players do not support encrypted content, HDCP usually is not supported and not an issue. Display Port is still rare and some players still provide VGA output for legacy displays. Analog audio is fairly typical and digital audio typically is provided by the optical TOSLINK. Some devices do not provide separate audio outputs at all. The only way to obtain audio on these units is by extracting it from the HDMI signal via separate converter boxes, but this adds cost and complexity.

Large Screen Projection

High-end video players are designed for complex projection surfaces, giant screens, digital cinema, planetariums, architectural video mapping, and non-standard output resolutions and frame rates. In addition to supporting higher bit rates, 4k resolution and uncompressed or JPEG2000 file playback, these devices integrate powerful image processing capabilities for image warping and content manipulation. They also feature a variety of pro-level video and audio interfaces for added flexibility and performance. Multiple units can be deployed and accurately synchronized for multi-output display applications.

Finally, it is crucial that the systems integrator run a series of tests on the device prior to installation to ensure its reliability and performance. These tests can include long-term testing under a variety of playback conditions, including standalone and show control, power cycle testing and performance at higher temperatures, which is a

potential concern for units deployed in tight exhibition spaces.

Response To Commands

Other items to look for include checking the unit's responsiveness to commands. For example, how long does it take the player to respond after you send the device a play command? This function is important to see if the unit is suited for sensor- or button-triggered playback, such as in a museum kiosk environment. Test the unit at high bit rates to ensure that playback is smooth without any visible image artifacts or dropped frames.

Also check compatibility with various video files, because many devices are fickle about content.

With a multitude of manufacturers offering devices at attractive price points, systems integrators can become overwhelmed by the variety of options available. What is most important is to research and test the features provided, and ensure that they match the specific needs of the application. Hopefully the steps outlined here can help ensure the proper choice is made and a high performance and reliable device is utilized.



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